780 CMR 3609

ROOF COVERINGS

3609.1 GENERAL

3609.1.1 Application: The provisions of 780 CMR 3609.1 shall control the design and construction of roof coverings for all buildings. Roof coverings shall be listed for their intended use. Materials for which listing is not available shall be required to be approved by the ***State Board of Building Regulations and Standards in accordance with 780 CMR 109.3.4.***

3609.1.2 Requirements: The roof covering shall be capable of accommodating the loads indicated in ***780 CMR 3603.1*** and provide a barrier against the weather to protect supporting elements and the structure beneath.

3609.1.3 Roofing covering materials: Roofs shall be covered with materials as set forth in ***780 CMR 3609.3 through 3609.9.*** Classified roofing shall conform to UL 790, ***as listed in Appendix A,*** and shall be installed when the edge of the roof is less than three feet (914 mm) from a property line ***or as required by city or town ordinance or bylaw***. The roofing materials set forth in ***780 CMR 3609.4 through 3609.6*** and concrete slabs may be accepted as Class A roofing.

780 CMR 3609.2 DECK PREPARATION

3609.2.1 Supporting construction: Roofing shall be applied only when the supporting roof construction is clean and dry.

3609.2.2 Single layer underlayment: When a single ply of underlayment is required, it shall be laid parallel to the eaves with a two-inch (51 mm) top lap and four-inch (102 mm) end lap nailed sufficiently to hold in place.

3609.2.3 Multiple layer underlayment: When two layers of underlayment are required, they shall be laid shingle fashion parallel to the eaves with 19-inch (483 mm) top lap and 12-inch (305 mm) end lap, with end laps located at least six feet (1829 mm) from end laps in the preceding course, and blind nailed sufficiently to hold in place.

780 CMR 3609.3 ASPHALT SHINGLES

3609.3.1 General: Asphalt shingles shall be applied only to solidly sheathed roofs Asphalt shingles shall be applied according to the manufacturer's printed instructions and 780 CMR 36.

3609.3.2 Slopes of four units vertical in 12 units horizontal (33% slope) or greater: Asphalt shingle roofs shall have an underlayment of not less than one ply of No. 15 felt, applied as required in ***780 CMR 3609.2*** and Table ***3609.3.4***.

3609.3.3 Slopes less than four units vertical in 12 units horizontal (33% slope) but not less than two units vertical in 12 units horizontal (17% slope): Nominally double-coverage asphalt shingles may be installed on slopes as low as two units vertical in 12 units horizontal (17% slope), provided the shingles are approved self-sealing shingles or are hand sealed and are installed with an underlayment consisting of two layers of No. 15 felt, applied as required in ***780 CMR 3609.2*** and Table ***3609.3.4.*** The two layers of felt shall be cemented together, in addition to the required nailing, from the eaves up the roof to overlie a point 24 inches (610 mm) inside the interior wall line of the building. Asphalt shingles shall not be used on roofs with slopes less than two units vertical in 12 units horizontal (17% slope).

3609.3.4 Fasteners: Asphalt shingles shall be fastened according to the manufacturer's printed instructions and Table ***3609.3.4***.

3609.3.5 Valley flashing: Roof valleys shall be flashed by one of the methods listed in ***780 CMR 3609.3.5.1 through 3609.3.5.3***. Asphalt shingles shall be applied according to the manufacturer's printed instructions.

3609.3.5.1 Sheet metal: Open roof valleys may be provided of not less than No. 28 gage galvanized corrosion-resistant sheet metal and shall extend at least eight inches (203 mm) from the center line each way. Sections of flashing shall be jointed to provide an adequate water lock.

TABLE 3609.3.4
ASPHALT SHINGLE APPLICATION

ROOF OF SLOPE	NOT PERMITTED BELOW 2:12	
	2:12 to less than 4:12	4:12 and over
DECK REQUIREMENT	Asphalt shingles shall be fastened to solidly sheathed roofs. Sheathing shall conform to Tables 3605.3.2.1.1a and 3608.3.3.2	
UNDERLAYMENT Temperate climate	Asphalt strip shingles may be installed on slopes as low as two inches in twelve inches, provided the shingles are approved self-sealing or are hand sealed and are installed with an underlayment consisting of two layers of nonperforated Type 15 felt applied shingle fashion. Starting with an 18-inch-wide sheet and a 36-inch-wide sheet over the eaves, each subsequent sheet shall be lapped 19 inches horizontally.	One layer nonperforated Type 15 felt lapped two inches horizontally and four inches vertically to shed water.
Severe climate: In areas subject to wind-driven snow or roof ice buildup.	Same as for temperate climate, and additionally the two layers shall be solid cemented together with approved cementing material between the plies extending from the eave up the roof to a line 24 inches inside the exterior wall line of the building.	Same as for temperature climate, except that one layer No. 40 coated roofing or coated glass base sheet shall be applied from the eaves to a line 12 inches inside the exterior wall line with all laps cemented together.
ATTACHMENT Type of fasteners	Corrosion-resistant nails, minimum 12-gage _-inch head, or approved corrosion-resistant staples, minimum 16-gage $^{15}/_{16}$-inch-crown width.	
	Fasteners shall be long enough to penetrate into the sheathing ¾ inch or through the thickness of the sheathing, whichever is less.	
No. of fasteners[1]	four per 36-40 inch strip two per nine-18-inch strip	
Exposure Field of roof	Per manufacturer's instructions included with packages of shingles.	
Hips and ridges	Hip and ridge weather exposures shall not exceed those permitted for the field of the roof	
Method	Per manufacturer's instructions included with packages of shingles.	
FLASHINGS Valleys Other flashings	Per 780 CMR 3609.3.5 Per 780 CMR 3609.3.6 and 3609.3.7	

For SI: 1 inch = 25.4 mm.
1. Figures shown are for normal application. For special conditions such as mansard application and where roofs are in special wind regions, shingles shall be attached per manufacturer's instructions.

3609.3.5.2 Ro11 roofing: Woven or closed valleys may be constructed by centering 36-inch-wide (914 mm) roll roofing material not less than Type 50 in the valley over the underlayment.

3609.3.5.3 Multiple layer flashing: Roof valley flashing may be of laced composition shingles, applied in an approved manner, with an underlay not less than 30-pound (14 kg) felt extending ten inches (254 mm) from the center line each way, or shall be of two layers of 90-pound (41 kg) mineral-surfaced cap sheet cemented together with the bottom layer not less than 12 inches (305 mm) wide laid face down and the top layer not less than 24 inches (610 mm) wide laid face up.

3609.3.6 Side wall flashing: Flashing against a vertical sidewall shall be by the step-flashing method.

Exception: Other methods shall be permitted when installed in accordance with the shingle manufacturer's printed instructions.

3609.3.7 Other flashing: Flashings against vertical front wall, as well as soil stack, vent pipe and chimney flashing, shall be applied according to asphalt shingle manufacturer's printed instructions.

3609.3.8 Hips and ridges: Hip and ridge shingles shall be fastened according to the manufacturer's printed instructions and Table ***3609.3.4.***

780 CMR 3609.4 SLATE SHINGLES

3609.4.1 General: Slate shingles shall be applied in an approved manner and securely fastened with corrosion-resistant nails or corrosion-resistant nails and wire.

3609.4.2 Slate shingles: Slate shingles shall conform to ASTM C406 as listed in Appendix A. Slate shingles shall not be installed on roof slopes below two units vertical in 12 units horizontal (2:12). Double-layer No. 15 felt underlayment shall be required on roof slopes below four units vertical in 12 units horizontal (4:12). Single-layer No. 15 felt underlayment shall be required on all other roof slopes. Slate shingles shall be secured to the roof with two fasteners per slate. The minimum slate headlap shall be three inches (76 mm).

3609.4.3 Valleys: Roof valley flashing shall be provided of not less than No. 28 gage galvanized corrosion-resistant sheet metal and shall extend at least 11 inches (279 mm) from the center line each way and shall have a splash diverter rib not less than one inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than six inches (153 mm) and shall be provided with an adequate water lock.

780 CMR 3609.5 METAL

3609.5.1 General: Flat sheets or shingles shall be applied only to solid sheathed roofs. Metal roofing shall be applied in an approved manner ***consistent with the manufacturer's recommendations***.

3609.5.2 Materials: Metal roofing shall conform to AA ASM 35, or ASTM A 361 or B 209, ***as listed in Appendix A***.

3609.5.3 Metal shingles: Metal shingles shall not be installed on roof slopes below four units vertical in 12 units horizontal (4:12). Single-layer underlayment of No. 30 felt is required for all metal shingles other than flat metal shingles on all roof slopes.

780 CMR 3609.6 TILE, CLAY OR CONCRETE SHINGLES

3609.6.1 Attachment: All roof tile shall be securely fastened with corrosion-resistant nails or corrosion-resistant nails and wire, or other approved means.

3609.6.2 Interlocking clay or cement tile: Interlocking clay or cement tile shall be installed only over solid sheathing or spaced structural sheathing boards. Interlocking clay or cement tile shall not be installed on roof slopes below four units vertical in 12 units horizontal (4:12). Horizontal battens shall be required on roof slopes over seven units vertical in 12 units horizontal (7:12). Single-layer underlayment is required over solid sheathing on all roof slopes. Reinforced underlayment shall be required where spaced sheathing is installed. Regardless of roof slope, the first three tile courses and all tile within three feet (914 mm) of roof edges, changes in roof slope or changes in slope direction, shall be fastened to the roof. For the field of the roof, fastening is not required on roof slopes below five units vertical in 12 units horizontal (5:12); every tile course shall be fastened on roof slopes five units vertical in 12 units horizontal (5:12) to less than 12 units vertical in 12 units horizontal (12:12); and every tile shall be fastened on roof slopes 12 units vertical in 12 units horizontal (12:12) and over. Tile overlap shall be in accordance with approved manufacturer's installation instructions.

3609.6.3 Noninterlocking clay or cement tile: Noninterlocking clay or cement tile shall not be installed on roof slopes below 2½ units vertical in 12 units horizontal (2½:12). Double-layer underlayment is required on roof slopes below three units vertical in 12 units horizontal (3:12). Single-layer underlayment is required on all other roof slopes. Noninterlocking clay or cement tile shall be secured to the roof with two fasteners per tile. The minimum tile overlap shall be three inches (76 mm).

3609.6.4 Tile lugs: Tile with projection anchor lugs at the bottom of the tile shall be held in position by means of one-inch-by-two-inch wood (25 mm by 51 mm) stripping, treated to resist moisture deterioration, nailed to the roof sheathing over the underlayment or other approved means.

3609.6.5 Nailing and flashing: Nailing and valley flashing shall be the same as required for slate shingles.

780 CMR 3609.7 BUILT-UP ROOFING

3609.7.1 Decking: Built-Up roofing shall be applied only to solid surface roof decks.

3609.7.2 Materials: Built-Up roofing shall conform to UL 55A ***as listed in Appendix A***.

3609.7.3 Underlayment: An underlayment of one layer sheathing paper is required under built-up roofing assemblies when the roof deck is constructed of sheathing boards Underlayment is to be applied as specified in ***780 CMR 3609.2***.

3609.7.4 Base ply: On nailable decks, a base ply is to be fastened to the deck in accordance with the manufacturer's published specifications and Table **3609.3.4**.

3609.7.4.1 Nonnailable decks: On nonnailable decks, cast-in-place concrete or precast concrete, a base ply required by manufacturer's specification shall be cemented or spot mopped to a primed deck as required by the type of deck material, using not less than 20 pounds (9.1 kg) per square of hot asphalt for solid mopping, or not less than ten pounds (4.5 kg) per square for spot mopping, or not less than 1½ gallons (5.7 L) per square of cold bituminous compound, or 25 pounds (11 kg) per square of coal-tar pitch, in accordance with the manufacturer's published specifications. If a base ply is not used, a minimum of three roofing plies applied shingle fashion shall be solidly cemented to the primed deck and cemented together, using no less cementing material than that specified for a solidly cemented base ply.

3609.7.4.2 Insulated decks: On insulated decks, a vapor retarder shall be installed between the deck and the insulation. Insulation shall be of a rigid type suitable for application of a roof covering. The insulation must be properly attached using mechanical fasteners Type II or Type III asphalt in accordance with ASTM D 312***, as listed in Appendix A***, and installed in accordance with the manufacturer 's published ply specifications. The insulation may be taped if required. A base ply required by the manufacturer's specification shall be solidly cemented to the insulation, using no less cementing material than that specified for a solidly cemented base ply to a primed nonnailable deck. If a base ply is not used, a minimum of three roofing plies applied shingle fashion shall be solidly cemented to the insulation and cemented together, using no less cementing material than that specified for a solidly cemented base ply.

3609.7.5 Membrane over base ply: A minimum of two successive layers of roofing plies shall be solidly cemented shingle fashion to the base ply, using no less cementing material than that specified for a solidly cemented base ply.

3609.7.6 Surfacing: The built-up roofing assembly shall be surfaced by one of the methods described in ***780 CMR 3609.7.6.1 and 3609.7.6.2.***

3609.7.6.1 Mineral aggregate roofs: Mineral aggregate surfaced roofs shall be surfaced with not less than 60 pounds (27 kg) of hot asphalt or 75 pounds (34 kg) of coal-tar pitch in which is embedded not less than 400 pounds (181 kg) of gravel or 300 pounds (136 kg) of crushed slag per roofing square.

3609.7.6.2 Mineral-surfaced cap roofs: Mineral-surfaced cap sheets shall be cemented to the roofing plies using no less cementing material than specified for between the plies.

780 CMR 3609.8 WOOD SHINGLES

3609.8.1 Sheathing requirements: Wood shingles shall be applied to roofs with solid or spaced sheathing. Spaced sheathing boards shall not be less than one inch by four inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers a distance equal to the actual weather exposure of the shingles, not to exceed the dimensions set forth in Table ***3609.8 3.3***.

3609.8.2 Materials: Wood shingle roofing shall conform to CSSB "Grading and Packing Rules for Centigrade Red Cedar Shingles," ***as listed in Appendix A***.

3609.8.3 Installation: Wood shingles shall be laid with a side lap of not less than 1½ inches (38 mm). Joints in adjacent courses shall be offset a minimum of 1½ inches (38 mm) and no two joints in alternate courses shall be in direct alignment. Spacing between shingles shall not be less than ¼ inch (6.4 mm) or more than _ inch (9.5 mm). Wood shingles shall be fastened to the sheathing in accordance with Table ***3609.8.3.***

3609.8.3.1 Roof slope: Shingles shall not be installed on a roof having a slope less than three units vertical in 12 units horizontal (25% slope) On roofs having slopes of three units vertical in 12 units horizontal (25% slope) to less than four units vertical in 12 units horizontal (33% slope), shingles shall be installed with reduced exposures or they shall be installed over an underlayment of not less than one ply of No. 15 felt, applied as required in ***780 CMR 3609.2***.

3609.8.3.2 Valley flashing: Roof valley flashing shall not be less than No. 28 gage corrosion-resistant sheet metal and shall extend ten inches (254 mm) from the center line each way for roofs having slopes less than 12 units vertical in 12 units horizontal (100% slope) and seven inches (178 mm) from the center line each way for slopes of 12 units vertical in 12 units horizontal (100%) slope) and greater. Sections of flashing shall have an end lap of not less than four inches (102 mm).

3609.8.3.3 Weather exposure: Weather exposures shall not exceed those set forth in Table ***3609.8.3.3.*** Hip and ridge weather exposures shall not exceed those permitted for the field of the roof. Wood shingle hip and ridge units shall conform to CSSB "Grading Rules for Shake Hip and Ridge based on the Standards of the Cedar Shake and Shingle Bureau," ***as listed in Appendix A***. Nails used to fasten hip and ridge units shall be longer than those used in the field of the roof in order to penetrate the sheathing ¾-inch (19 mm) minimum.

3609.8.3.4 Label required: Each bundle of shingles shall be identified by a label of an approved grading or inspection bureau or agency.

780 CMR 3609.9 WOOD SHAKES

3609.9.1 Sheathing requirements: Wood shakes shall be applied to roofs with solid or spaced sheathing. Spaced sheathing boards shall not be less than one-inch-by-four-inch (25 mm by 102 mm) nominal dimensions for shakes installed at maximum 7½-inch (190 mm) exposures and shall be spaced on centers a distance equal to the actual weather exposure of the shakes, not to exceed the dimensions set forth in Table ***3609.8.3.3***. For 24-

inch (610 mm) shakes used in ten-inch (254 mm) exposure, the spaced sheathing shall be either one-inch-by-four-inch (25 mm by 102 mm) nominal dimension board spaced on centers a distance equal to the weather exposure with an additional one-inch-by-four-inch (25 mm by 102 mm) board placed between these boards, or one-inch-by-six-inch (25 mm by 153 mm) nominal dimension boards spaced on centers a distance equal to the weather exposure. The shakes shall be applied over an underlayment as required in Table ***3609.8.3***.

TABLE 3609.8.3
WOOD SHINGLE OR SHAKE APPLICATION

ROOF SLOPE	WOOD SHINGLES Not permitted below 3:12 See Table 3609.8.3.3	WOOD SHAKES Not permitted below 4:12[1] See Table 3609.8.3.3
DECK REQUIREMENT	Wood shingles shall be applied to roofs having solid or spaced sheathing in accordance with 780 CMR 3609.8.1	Wood shakes shall be applied to roofs having solid or spaced sheathing in accordance with 780 CMR 3609.9.1
UNDERLAYMENT Temperate climate	No Requirements	One 18-inch-wide interlayment of Type 30 felt shingled between each course in such a manner that no felt is exposed to the weather below the shake butts.
Severe climate: In areas subject to roof ice buildup.	Two layers of nonperforated Type 15 felt applied shingle fashion shall be installed and solid cemented together with approved cementing material between the plies extending from the eaves to a line 36 inches inside the exterior wall line of the building.	Sheathing shall be solid and the shakes shall be applied over a layer of nonperforated Type 15 felt applied shingle fashion. Two layers of nonperforated Type 15 felt applied shingle fashion shall be installed and solid cemented together with approved cementing material between the plies extending from the eaves up the roof to a line 36 inches inside the exterior wall line of the building.
ATTACHMENT Type of fasteners	Corrosion-resistant nails, minimum No. 14 ½-gage, $^{7}/_{32}$-inch head, or corrosion-resistant staples when approved by the building official.	Corrosion-resistant nails, minimum No. 13-gage, $^{7}/_{32}$-inch head, or corrosion-resistant staples when approved by the building official.
	Fasteners shall be long enough to penetrate into the sheathing ¾ inch or through the thickness of the sheathing, whichever is less.	
No. of fasteners	two per shingle	two per shake
Exposure Field of roof Hips and ridges	Weather exposures shall not exceed those set forth in Table 3609.8.3.3. Hip and ridge weather exposures shall not exceed those permitted for the field of the roof.	
Method	Shingles shall be laid with a side lap of not less than 1½ inches between joints in adjacent courses, and not in direct alignment in alternate courses. Spacing between shingles shall be approximately ¼ inch. Each shingle shall be fastened with two nails only, positioned approximately ¾ inch from each edge and approximately one inch above the exposure line. Starter course at the eaves shall be doubled.	Shakes shall be laid with a side lap of not less than 1½ inches between joints in adjacent courses. Spacing between shakes shall not be less than _ inch or more than _ inch except for preservative-treated wood shakes which shall have a spacing not less than ¼ inch or more than _ inch. Shakes shall be fastened to the sheathing with two nails only, positioned approximately one inch from each edge and approximately two inches above the exposure line. The starter course at the eaves shall be doubled. The bottom or first layer may be either shakes or shingles. 15-inch or 18-inch shakes may be used for the starter course at the eaves and final course at the ridge.
FLASHINGS Valleys Other flashings	Per 780 CMR 3609.8.3.2 and 3609.9.3.3 Per accepted practice.	

For SI: 1 inch = 25.4 mm.

1. When approved by the building official, wood shakes may be installed on a slope of not less than three units vertical in 12 units horizontal (25% slope) when underlayment of not less than nonperforated Type 15 felt is installed.

TABLE 3609.8.3.3
WOOD SHINGLE AND SHAKE MAXIMUM WEATHER EXPOSURES

GRADE	LENGTH (inches)	LESS THAN 4" IN 12" (inches) (Minimum 3" in 12" Permitted)	4" IN 12" AND STEEPER (inches)
WOOD SHINGLES			
No. 1	16	3¾	5
No. 2[1]	16	3½	4
No. 3[1]	16	3	3½
No. 1	18	4¼	5½
No. 2[1]	18	4	4½
No. 3[1]	18	3½	4
No. 1	24	5¾	7½
No. 2[1]	24	5½	6½
No. 3[1]	24	5	5½
WOOD SHAKES[2]			
No. 1	18	7½	7½
No. 2	18[3]	Not Permitted	5½
No. 1	24	10	10
No. 2	24[3]	Not Permitted	7½

For SI: 1 inch = 25.4 mm.
1. To be used only when specifically permitted by the building official.
2. Exposure of 24-inch resawn handsplit shakes shall not exceed 7½ inches regardless of the roof slope.
3. No. 2 grade wood shakes pertain to Taper-sawn shakes only.

3609.9.2 Materials: Wood shake shall conform to CSSB "Grading and Packing Rules for Certi-Split Red Cedar Shakes" or "Grading Rules for Certi-Sawn Taper-Sawn Cedar Shakes," ***each as listed in Appendix A.***

3609.9.3 Installation: Preservative treated wood shakes shall conform to CSSB "Wood Shakes (Preservative Treated) based on Grading and Packing Rules for Treated Southern Pine Taper Sawn Shakes of the Cedar Shake and Shingle Bureau," ***as listed in Appendix A***. Wood shakes shall be fastened to the sheathing in accordance with Table ***3609.8.3***.

3609.9.3.1 Shake and shingle placement: The starter course at the eaves shall be doubled and the bottom layer shall be either 15-, 18- or 24-inch (381, 457 or 610 mm) wood shakes or wood shingles. Fifteen-inch (381 mm) or 18-inch (457 mm) wood shakes may be used for the final course at the ridge. Shakes shall be interlaid with 18-inch-wide (451 mm) strips of not less than No. 30 felt shingled between each course in such a manner that no felt is exposed to the weather by positioning the lower edge of each felt strip above the butt end of the shake it covers a distance equal to twice the weather exposure.

3609.9.3.2 Roof slope: Shakes shall not be installed on a roof having a slope less than four units vertical in 12 units horizontal (33% slope) unless they are installed over an underlayment of not less than No. 15 felt, applied as required in ***780 CMR 3609.2***.

3609.9.3.3 Valley flashing: Roof valley flashing shall not be less than No. 28 gage corrosion-resistant sheet metal and shall extend at least 11 inches (279 mm) from the center line each way. Sections of flashing shall have an end lap of not less than four inches (102 mm).

3609.9.3.4 Weather exposure: Weather exposures shall not exceed those set forth in Table ***3609.8.3.3***. Hip and ridge weather exposures shall not exceed those permitted for the field of the roof. Wood shake hip and ridge units shall conform to CSSB "Grading Rules for Shake Hip and Ridge based on the Standards of the Cedar Shake and Shingle Bureau," ***as listed in Appendix A***. Nails used to fasten hip and ridge units shall be longer than those used in the field of the roof in order to penetrate the sheathing ¾ inch (19 mm) minimum.

3609.9.3.5 Label Required: Each bundle of shakes shall be identified by a label of an approved grading or inspection bureau or agency.

780 CMR 3609.10 REROOFING

3609.10.1 General: Materials and methods used for repair, replacement or recovering an existing roof shall comply with ***780 CMR 3601.17 and 3609.1.1***. When the repair replacement or recovering within any 12-month period exceeds 25% of the roof covering of the building, the entire roof covering shall comply with the requirements for new roofing.

3609.10.2 Structural and construction loads: The existing roof system shall be capable of supporting all equipment loads encountered during installation as well as the loads resulting from the new roofing materials.

3609.10.3 Recovering vs. replacement: New roof covering shall not be installed without first removing existing roof coverings when any of the following conditions occur:

1. When the existing roof or roof covering is water soaked or deteriorated to the point of being unacceptable as a base for additional roofing.

2. When the existing roof covering is wood shake, slate, clay or cement tile; except when the new roof covering is installed in accordance with approved industry standards.

Exception: The removal of existing roof coverings shall not be required where complete and separate roofing systems are provided which transmit all roof loads directly to the structural system of the building and which do not bear upon the existing roof.

3. When the existing roof has two or more layers of any type of roofing.

3609.10.4 Reinstallation of materials: The reinstallation of existing or damaged wood or asphalt roof covering materials which have been removed is not permitted.

3609.10.5 Flashings: Flashings shall be reconstructed in accordance with approved manufacturer's instruction.

NON-TEXT PAGE